

PRECISION FEED MANAGEMENT

By Lee Telega, John Conway and Tom Tylutki

Managing your herd's feeding program for more precise delivery of nutrients to your cows pays big dividends

You can meet the challenge of precision feeding

By feeding more homegrown forages, which are generally the least expensive feed on your dairy, and buying grain to complement your forages, you can reduce feed costs and improve cow health. And, yes, as other articles in this month's **The Manager** point out, there are even environmental benefits. *The precision feed advantage* on the following page summarizes some of these benefits, demonstrated right here in New York State.

That's the good news. Now for the challenging part: Implementing precision feeding takes intensive planning, monitoring and measuring from the fields to the silos and from the feed wagon to the feed bunk. Doing all these things is the only way to ensure the best feeds containing the right nutrients are delivered to every cow and group of cows daily.

The flow chart below illustrates the planning and monitoring required to implement precision feeding. Here's an example from that chart:

Dry matter intake (DMI) must be taken regularly in precision feeding. It's necessary to know how much cows are eating in order to calculate many of the benchmarks, shown in green type in the flow-chart, that define precision feeding.

Determining DMI weekly for each group of cows is important when you first implement precision feeding. When you get a handle on how intake changes over time, monthly measurements might be just as useful for keeping things on track.

Do the math

Determining DMI isn't difficult, especially if your feed wagon has weigh cells. Merely add the weights of the feed delivered to the bunk in a day. Grab-samples should be taken from each load to determine the DM content of the feed.

Before the next day's feeding, sweep the refused feed to one end of the bunk and shovel it into the feed wagon. Sample the refused feed to determine its DM content. With some simple math, shown in the sidebar *Four steps to measuring DMI*, you can calculate DMI per cow for a group.

Determining DMI is only one of the important tasks of precision feeding. Management questions of who, how, when and where must be answered for

PFM -- What, How & Why?

Using Key Integrated Planning Tools:

- ✓ Ration balancing – quarterly (minimum) to monthly
- ✓ Inventory planning – yearly (minimum) to quarterly
- ✓ Forage budgeting – yearly (minimum) to quarterly
- ✓ Crop rotation planning – yearly (minimum) to quarterly
- ✓ Nutrient management plan – yearly

Making These Routine Measures:

- Body weight (by scale or tape) at calving
- Body condition score 6 times a year
- Monthly DHI testing
- Grain and forage testing – quarterly (minimum) to monthly
- **Weight intake – monthly (minimum) to weekly**
- Crop yields – weigh loads and bales needed
- Net milk-income-over-feed costs by Dairy Profit Monitor
- Overall profitability by DFB5 or Farm Credit Summary

Benefit Your Business and the Planet

Providing adequate, not excess, nutrients to the animal while maintaining environmental and economic sustainability through the integration of feeding and forage management.

Hit Benchmarks Defining Precision Feeding

- Forage NDF: $\geq .9\%$ of body weight
- 60% of lactating herd diet is forage (dry matter basis)
- 60% of diet is homegrown
- Ration P within 5% of 2001 NRC requirements
- Diet CP: $<16.5\%$
- MUN: 8 – 12 (mg/dl)
- % dead or culled cows less than 60 days in milk: $<5\%$

Meet Goals of Precision Feeding:

- ◆ Improve or increase:
 - Δ Nutrient efficiency
 - Δ Homegrown feed utilization
 - Δ Milk income over feed costs
- ◆ Optimize:
 - Δ Purchased feed nutrient imports
 - Δ Crop production for the feeding
- ◆ Reduce or minimize:
 - Δ Nutrient overfeeding
 - Δ Nutrient excretion and accumulations

FYI

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THE MANAGER

all the planning and measuring that goes into a successful precision feeding program. You need to know:

- Who will take samples and weights?
- How will the person be trained to do the job? Training in the right way to take the measure is essential.
- When will samples and weights be done?
- Where will the information be recorded?

Implementing precision feeding requires close work with your nutritionist, crop consultant and other advisers. Pulling together a committed team, made up of people listed in *Your PFM team*, and incorporating the various tasks into the routine chores of your dairy are the real challenges of precision feed management.

The flow diagram pulls all elements of precision feed management into a single view. Copy or tear out that page and talk with your nutritionist or feed representative about getting this money-making feed management system working on your dairy. ■

Your PFM team

Fill in the blanks with names of precision feed management team members.

You: _____
Feeder(s): _____
Nutritionist: _____
Crop consultant: _____
Veterinarian: _____
Lender (if capital purchases required): _____

Precision Feed Management programs; New York City Watershed and Upper Susquehanna Basin.

The precision feeding advantage

- Lower operating costs of \$1.33 per cwt.¹
- 1,400 pounds more milk per cow¹
- Lower manure phosphorus (P) excretion by 11.4 pounds per cow per year (22%)²
- Lower nitrogen (N) excretion by 28.2 pounds per cow per year (8%)²
- Improved P efficiency use by 66%²
- Improved N efficiency use by 65%²
- Efficiency improvements ranged from 10 - 77%²

1. Comparison made in Cornell Dairy Farm Business Survey, paired study of herds with similar demographics.

2. Research data from Delaware Cornell Cooperative Extension

4 steps to measuring DMI

Step 1: Weigh and sample feed delivered and refused.

An example: A group of 95 cows is fed twice a day. The morning feeding delivers 3,620 pounds to the bunk; the evening feeding delivers 5,170 pounds. Take grab-samples from each feeding. Before next morning feeding, 310 pounds of unfed feed is swept up and sampled.

Step 2: Determine dry matter content of samples.

Use a Koster tester or microwave oven to determine dry matters (DM) of samples. Start with 100 grams of the sample and dry to a constant weight. The weight is the percent DM of that sample.

Our example:

	Morning Feeding	Evening Feeding	Refused Feeding
Weight before drying	100g	100g	100g
Weight after drying	58g	59g	63g
Percent dry matter	58%	59%	63%

Step 3: Calculate total DM consumed by the group that day.

Determine the amount of DM in each feeding by multiplying the amount fed by the percent DM. Then determine the amount of DM refused and subtract that from the amount fed.

In our example, 4,955 pounds of DM was consumed.

	Morning Feeding	Evening Feeding	Refused Feeding
Pounds fed	3,620	5,170	310
Percent dry matter	58%	59%	63%
Pounds dry matter	2,100	3,050	195

Step 4: Divide by number of cows in the group.

In our example, dry matter intake per cow = $4,955 / 95 \text{ cows} = 52 \text{ pounds}$

